



# **Petition to Amend Air Quality Conditions of Certification for the Lodi Energy Center Project (08-AFC-10C)**

prepared for:

**Northern California Power Agency**

submitted to:

**California Energy Commission**

February 1, 2013

prepared by:

Sierra Research, Inc.  
1801 J Street  
Sacramento, California 95811  
(916) 444-6666

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## ACRONYMS AND ABBREVIATIONS

AFC	application for certification
CEC	California Energy Commission
LEC	Lodi Energy Center
LORS	laws, ordinances, regulations, and standards
MW	megawatt
NCPA	Northern California Power Agency
STIG	steam turbine injected gas turbine
WPCF	Water Pollution Control Facility

## **1. INTRODUCTION**

### **1.1 Background**

The California Energy Commission (CEC) issued a license for Northern California Power Agency's (NCPA's) Lodi Energy Center (LEC) Project on April 21, 2010. The LEC Project is a nominal 296-megawatt (MW) combined-cycle power plant located in the City of Lodi. The LEC is located on an approximately 4.4-acre parcel adjacent to the City of Lodi's White Slough Water Pollution Control Facility (WPCF) to the east, treatment and holding ponds associated with the WPCF to the north, the existing 49-MW NCPA Combustion Turbine Project #2 (STIG plant) to the west, and the San Joaquin County Mosquito and Vector Control facility to the south. The project site is on land owned and incorporated by the City of Lodi and is approximately 6 miles west of the Lodi city center.

The CEC Compliance Project Manager (CPM) issued a letter authorizing the start of construction activities on July 14, 2010. Construction was initiated by the LEC project construction contractor, ARB, Inc., in late August 2010. Commercial operations for the plant began in November 2012.

The purpose of this petition is to request an amendment to the LEC license Condition of Certification AQ-25 to modify the one-hour CO limit for the natural gas-fired combustion turbine generator during start-up and shutdown periods and to allow for combustor tuning activities. During startups, CO emissions are elevated above normal, controlled levels while the gas turbine is being brought up to full load and the oxidation catalyst emissions control system becomes fully effective. When the LEC gas turbine was originally permitted, the CO emission rate during startup was estimated based on startup data from other, similar gas turbines. However, NCPA has found that under certain conditions (for example, very low ambient temperatures, or after the gas turbine has been shut down for many hours), low-load CO emissions are higher than expected and the oxidation catalyst takes longer than expected to reach full control efficiency. Therefore, CO emissions during some startups are higher than anticipated and are elevated longer than was expected when NCPA received the Final Decision for the LEC in April 2010. As a result, the gas turbine cannot consistently comply with the current hourly CO limit that is applicable during startup.

In addition, NCPA has become aware of the need to perform periodic tuning activities on the gas turbine combustor. These tuning operations may require operation of the turbine

at low loads, and during these low-load tuning operations, gas turbine CO and NOx emissions are expected to exceed the routine operation hourly and daily limits.

An application for amendment has been submitted to the San Joaquin Valley Air Pollution Control District, and is provided as Attachment A.

## 1.2 Description of Proposed Amendment

The CEC Final Decision (08-AFC-10) approved an hourly CO emission limit of 900 lb/hr during start-up and shutdown periods (Condition AQ-25). This limit was proposed by NCPA based on information available at that time. However, experience with cold temperature gas turbine start-ups and startups after longer gas turbine down times indicates that CO emissions can be as high as 1,207 lb/hr during a cold startup. After discussion with the District permit engineer, NCPA has added a compliance margin of 25% to this highest measured emission rate to ensure future compliance. Consequently, NCPA is proposing to modify condition AQ-25 to allow CO emissions of up to 1,500 lb/hr during start-up and shutdown periods.

In this amendment, NCPA is also proposing changes to conditions AQ-26, 27, 28, 29, 32, and 33 to define and limit combustor tuning activities and to provide that the higher emissions limits applicable to startup and shutdown periods also apply during combustor tuning periods.

## 1.3 Necessity of Proposed Change

Sections 1769 (a)(1)(B) and 1769 (a)(1)(C) of the CEC Siting Regulations require a discussion of the necessity for the proposed changes to the Project and a discussion of whether this modification is based on information that was known by the petitioner during the certification proceeding. The need for the higher CO emission limit was not known to NCPA during the CEC licensing process for the LEC Project. NCPA first became aware of the difficulty of complying with the 900 lb/hr CO limit during gas turbine startups in late November, long after the issuance of the CEC Final Decision, when the gas turbine began to be dispatched regularly.

The original permit application estimates of CO emissions during startup were based on emissions data collected during the startup of other similar gas turbines. However, the STG6-5000F “Flex Plant 30” is a new turbine design for which there were no detailed startup emissions data. Once the plant became operational and began being called upon to start up under cold morning temperature and/or cold start (that is, after extended downtime) conditions, it became clear that the 900 lb/hr limit was overly restrictive. As a result, NCPA is requesting CEC approval of a modification of Condition of Certification AQ-25, which includes the one-hour CO emissions limit during start-up and shutdown periods.

The need for higher emissions limits during combustor tuning periods was also not known during the certification proceeding. NCPA did not become aware of the potential need for combustor tuning that would require extended operation at low loads until it began working with Siemens to address the concerns regarding elevated CO emissions during startup. Under the current conditions of certification, there is no provision for short-term elevated emissions under conditions other than commissioning and startup/shutdown.

NCPA is now aware that after new gas turbine combustor components are installed, the gas turbine's fuel system must be tuned periodically, including after major overhauls, to maintain compliance with manufacturer's specifications for emissions and combustion dynamics and to perform combustion and hot gas path inspections. Multiple fuel systems supply fuel gas to each gas turbine combustor, and the total gas flow is divided among the fuel systems to minimize NOx and CO production while also minimizing combustor dynamics and ensuring combustor stability. After gas turbine combustor replacement, a combustor must be tuned across its load range to achieve the optimal apportionment of fuel gas at each load point. During these low-load tuning operations, gas turbine CO and NOx emissions are expected to exceed the routine operation hourly and daily limits of conditions AQ-29 and AQ-33, respectively. As part of this modification, NCPA is proposing to limit tuning activities to 8 hours per tuning event, not to exceed 40 hours in a calendar year, and to limit tuning emissions to the same levels as startup and shutdown emissions.

#### 1.4 Summary of Environmental Impacts

Section 1769 (a)(1)(E) of the CEC Siting Regulations requires that an analysis be conducted to address impacts that the proposed revisions may have on the environment and proposed measures to mitigate significant adverse impacts. Section 1769 (a)(1)(F) requires a discussion of the impacts of proposed revisions on the facility's ability to comply with applicable laws, ordinances, regulations, and standards (LORS).

The proposed change referenced in this petition will not result in any additional potential significant impacts beyond those already identified in the original Final Decision. Section 3 discusses the potential impacts of the proposed changes on the environment, as well as the proposed revisions' consistency with LORS.

#### 1.5 Consistency of Amendment with License

Section 1769 (a)(1)(D) of the CEC Siting Regulations requires a discussion of the consistency of each proposed project revision with the assumptions, rationale, findings, or other basis of the Final Decision and whether the revision is based on new information that changes or undermines the bases of the final decision. Also required is an explanation of why the changes should be permitted.

Consistent with the CEC Siting Regulations Section 1769(a)(1)(A), this section includes a description of the requested project modifications, as well as the necessity for the changes. As set forth in the following sections, the proposed revisions do not undermine the assumptions, rationale, findings, or other basis of the Final Decision for the Project.

###



## **2. DESCRIPTION OF PROJECT CHANGES**

### **2.1 Proposed Changes**

Following approval of the LEC Project by the CEC and in conjunction with construction activities, NCPA moved forward with commissioning activities, and was on-line and producing power in November 2012. Data collected from this unit since its start-up, and experience with cold temperature gas turbine start-ups and startups after longer gas turbine down times, indicate that CO emissions can be as high as 1,207 lb/hr during a cold startup. As discussed in greater detail below, this information shows that the current one-hour CO limit during start-up and shutdown periods is overly restrictive, and must be revised in order to allow the gas turbine to operate in compliance with the facility conditions of certification. In addition, NCPA has become aware of the need to perform periodic combustor tuning that may require extended low-load operation of the gas turbine under conditions that would make it impossible to comply with currently permitted NOx and CO emission rates.

### **2.2 Necessity of Proposed Changes**

Sections 1769 (a)(1)(B) and 1769 (a)(1)(C) of the CEC Siting Regulations require a discussion of the necessity for the proposed changes to the Project and whether this modification is based on information that was known by the petitioner during the certification proceeding. During the licensing process, NCPA proposed hourly CO emission limit during start-up and shutdown periods of 900 lbs/hr based on information that was available at that time; the STG6-5000F “Flex Plant 30” is a new turbine design for which no detailed startup emissions data existed at the time of licensing. However, once the plant became operational and began being called upon to start-up under cold morning temperature and/or cold start (that is, after extended downtime) conditions, it became clear that the 900 lb/hr limit was not feasible on a regular basis, and would prevent efficient operation of the turbine.

NCPA has attempted to comply with the hourly CO limit during start-up periods by starting up the gas turbine as quickly as possible, thereby minimizing operation in the low load range where CO emissions are elevated. When CO emissions approach the hourly limit and the CO emission rate remains high, the operators may abort the start-up to avoid producing additional CO emissions and violating the hourly limit. However, this is not an adequate approach to compliance for several reasons. First, the gas turbine cannot be shut down immediately after the decision to abort the startup is made, so it continues to

emit CO following the operators' action to terminate the startup. As a result, the hourly limit is sometimes exceeded despite the operators' actions. Second, CO emissions are higher overall when this occurs because the startup must be reattempted in the following clock hour, resulting in a second hour of elevated CO emissions during startup. In addition, excessive startups produce additional wear on the gas turbine.

The gas turbine combustor was tuned during the commissioning period. However, the focus at that time was on minimizing low-load NOx emissions. Siemens may be able to perform additional tuning to improve low-load CO emissions performance as well, and this tuning could be beneficial in reducing CO emissions during gas turbine startups. In addition, the gas turbine's fuel system must be tuned periodically, including after major overhauls, to maintain compliance with manufacturer's specifications for emissions and combustion dynamics and to perform combustion and hot gas path inspections. Multiple fuel systems supply fuel gas to each gas turbine combustor, and the total gas flow is divided among the fuel systems to minimize NOx and CO production while also minimizing combustor dynamics and ensuring combustor stability. After gas turbine combustor replacement, a combustor must be tuned across its load range to achieve the optimal apportionment of fuel gas at each load point. During these low-load tuning operations, gas turbine CO and NOx emissions are expected to exceed the routine operation hourly and daily limits. Without provisions for higher hourly and daily NOx and CO emissions during combustor tuning periods, NCPA would be unable to perform tuning activities that are a necessary part of gas turbine maintenance and are required for efficient gas turbine operation.

###

### **3. ENVIRONMENTAL ANALYSIS OF THE PROJECT CHANGES**

NCPA has reviewed the modifications proposed herein to determine whether the changes will result in any environmental impacts that were not originally analyzed by the CEC when it approved the Project in April 2010.

The revised hourly CO during startup and shutdown periods will not result in increases in maximum daily, quarterly, or annual CO emissions, and no changes in those permitted limits are being requested. Similarly, extending the higher hourly and daily startup and shutdown emission limits to combustor tuning activities will not increase maximum daily, quarterly, or annual emissions from the facility because the overall daily, quarterly and annual emissions limits are unaffected by the proposed amendment.

#### **3.1 Subject Matter Unaffected by the Project Changes**

The following disciplines will not be affected by the proposed changes in this amendment and are not addressed below: Biology, Soils, Geologic Resources and Hazards, Hazardous Materials Management, Land Use, Noise and Vibration, Paleontologic Resources, Public Health, Socioeconomics, Traffic and Transportation, Visual Resources, Waste Management, Water Resources, and Worker Safety and Fire Protection.

#### **3.2 Air Quality**

The change in the permitted one-hour CO limit during startup and shutdown periods and the extension of the hourly and daily startup and shutdown emission limits to combustor tuning activities are not expected to have any significant impact on air quality, and no LORS will change as a result of the proposed permit change.

The requested hourly CO limit during startup, shutdown and combustor tuning periods is 1,500 lb/hr, compared with the permitted limit of 900 lb/hr. No increases in daily, quarterly, or annual CO emission limits are being requested, and CO modeling results indicate no exceedances of the state or federal Ambient Air Quality Standards at the higher emission rate.

### 3.2.1 Mitigation

NCPA will continue to minimize the amount of time that the gas turbine operates with elevated CO emissions by achieving startups as quickly as possible, and is proposing to limit combustor tuning periods to a maximum of 8 hours per day and 40 hours per year. NCPA is also consulting with Siemens regarding additional actions, including low-load tuning of the gas turbine in an attempt to reduce CO emissions at low loads (between 0 and 25% of rated load), that may be effective in reducing overall emissions during startup.

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## 4. PROPOSED MODIFICATIONS TO THE CONDITIONS OF CERTIFICATION

Consistent with the requirements of the CEC Siting Regulations Section 1769 (a)(1)(A), this section addresses the proposed modifications to the Project's Conditions of Certification.

NCPA has filed an application with the SJVAPCD for a modification to the facility authority to construct (ATC). The proposed modification would change Conditions 25, 26, 27, 28, 29, 32, and 33 of the ATC. NCPA is requesting conforming changes to Condition of Certification AQ-25, 26, 27, 28, 29, 32, and 33 in the CEC Final Decision. The proposed revisions to these Conditions of Certification are presented below.

**AQ-25** During start-up, ~~and shutdown~~ and combustor tuning periods, the emissions shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) – 160.00 lb/hr; CO – ~~900.00~~ 1500.00 lb/hr; VOC (as methane) – 16.00 lb/hr; PM<sub>10</sub> – 9.00 lb/hr; SO<sub>x</sub> (as SO<sub>2</sub>) – 6.10 lb/hr; or NH<sub>3</sub> – 28.76 lb/hr. [District Rule 2201]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-26** Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status ending when the fuel supply to the unit is completely turned off. [District Rule 4703, 3.26, 3.29]

**Verification:** No verification necessary.

**AQ-27** ~~Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status ending when the fuel supply to the unit is completely turned off. [District Rule 4703, 3.26]~~ Combustor tuning periods are any periods, not to exceed 8 hours in any calendar day or 40 hours in any calendar year, when combustor tuning activities are taking place. Combustor tuning activities are defined as any testing, adjustment, tuning, and calibration activities recommended by the gas turbine manufacturer to insure safe and reliable steady-state operation of the gas

turbines following replacement of the combustor components, during seasonal tuning events, or at other times when recommended by the turbine manufacturer or necessary to maintain low emissions performance. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NOx and CO production while minimizing combustor dynamics and ensuring combustor stability.

**Verification:** ~~No verification necessary.~~ A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-28** The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup, ~~and~~ shutdown and combustor tuning periods. [District Rule 4703, 5.3.2]

**Verification:** The project owner shall submit to the District and CPM the startup, ~~and~~ shutdown and combustor tuning event duration data demonstrating compliance with this condition as part of the quarterly operation report (AQ-SC8).

**AQ-29** Except during startup, ~~and~~ shutdown and combustor tuning periods, emissions from the gas turbine system shall not exceed any of the following limits: NOx (as NO<sub>2</sub>) - 15.54 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>; CO - 9.46 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>; VOC (as methane) 3.79 lb/hr and 1.4 ppmvd @ 15% O<sub>2</sub>; PM10 - 9.0 lb/hr; or SOx (as SO<sub>2</sub>) - 6.10 lb/hr. NOx (as NO<sub>2</sub>) emission limits are based on 1-hour rolling average period. All other emission limits are based on 3-hour rolling average period. [District Rules 2201, 4001 and 4703]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-32** Emissions from the gas turbine system, on days when ~~a~~ startup, ~~and/or~~ shutdown and/or combustor tuning activities occurs, shall not exceed the following limits: NOx (as NO<sub>2</sub>) - 879.7 lb/day; CO - 5,570.3 lb/day; VOC - 164.2 lb/day; PM10 - 216.0 lb/day; SOx (as SO<sub>2</sub>) - 146.4 lb/day, or NH<sub>3</sub> - 690.3 lb/day. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. [District Rule 2201]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-33** Emissions from the gas turbine system, on days when ~~a~~ startup, ~~and/or~~ shutdown and/or combustor tuning activities does not occur, shall not exceed

the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 373.0 lb/day; CO - 227.0 lb/day; VOC - 91.0 lb/day; PM<sub>10</sub> - 216.0 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) - 146.4 lb/day, or NH<sub>3</sub> - 690.3 lb/day. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. [District Rule 2201]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

###

## **5. POTENTIAL EFFECTS ON THE PUBLIC AND PROPERTY OWNERS**

The proposed change described in this amendment will have no effect on the public and property owners beyond what was originally approved by the CEC.\* Therefore, impacts on the public and property owners are expected to be the same as those analyzed during the license proceeding for the Project.

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\* CEC Siting Regulations Section 1769(a)(1)(G) and (I).



## **6. LIST OF PROPERTY OWNERS**

As required by the CEC Siting Regulations §1769(a)(1)(H), a list of property owners potentially affected by the proposed modification is provided. A list of property owners within 1,000 feet of the project boundary is included as Appendix B. Fewer properties are potentially affected by the project than the owners listed in the AFC because the proposed project change does not affect the gas line.

###

## Appendix A

### Application for Modification to the Authority to Construct



January 22, 2013

Rupi Gill  
Permit Services Manager  
San Joaquin Valley Air Pollution Control District  
4800 Enterprise Way  
Modesto, CA 95356-8718

P.O. Box 1478  
12745 N. Thornton Road  
Lodi, CA 95241  
(209) 333-6370  
[www.ncpa.com](http://www.ncpa.com)

Re: Application for Permit Modification  
Northern California Power Agency, Lodi Energy Center  
Permit No. N-2697-5-0

Dear Mr. Gill:

Northern California Power Agency (NCPA) is proposing a revision to the conditions of the Authority to Construct issued by the District in January 2010 for the Siemens Flex-Plant 30 STG6-5000F combined cycle gas turbine at Lodi Energy Center (LEC). The requested revision would:

1. Change the emission limit for carbon monoxide during gas turbine startups in condition #25 of the permit to better reflect what we now know regarding the startup emissions performance of the gas turbine under certain conditions, including cold temperatures and/or extended downtimes, as well as the need to perform periodic combustor tuning that may require extended low-load operation;
2. Change conditions #26, 27 and 28 to define and limit combustor tuning periods and activities; and
3. Change conditions #29, 32 and 33 to provide that the higher emissions limits applicable to startup and shutdown periods also apply during combustor tuning periods.

The proposed revision qualifies as a significant permit modification under Rule 2520 because it "seeks to change [an] emissions limit or standard...."

A more detailed discussion regarding the proposed revisions is provided below.

### **CO Emissions During Gas Turbine Startup**

During startups, CO emissions are elevated above normal, controlled levels while the gas turbine is being brought up to full load and the oxidation catalyst control system is becoming fully effective. When the LEC gas turbine was originally permitted, the CO emission rate during startup was estimated based on startup data from other similar gas turbines. However, NCPA has found that under certain conditions (for example, very low ambient temperatures, or after the gas turbine has been shut down for many hours),

low-load CO emissions are higher than expected and the oxidation catalyst takes longer than expected to reach full control efficiency. Therefore, CO emissions during some gas turbine startups are higher than anticipated. As a result, the gas turbine cannot consistently comply with the 900 pound per hour CO limit (Condition 25) that is applicable during startup.

The attached figure shows how CO emissions from the turbine vary during startups. The highest hourly CO emission rate observed during any gas turbine startup to date is 1,207 pounds per hour. Based on this, we are requesting an increase in the maximum hourly CO emissions limit during startup to 1,500 pounds per hour, to provide a 25% compliance margin above the maximum observed emission rate.

### **Gas Turbine Combustor Tuning**

The gas turbine combustor was tuned during the commissioning period. However, the focus at that time was on minimizing low-load NOx emissions. Siemens may be able to perform additional tuning to improve low-load CO emissions performance as well, and this tuning could be beneficial in reducing CO emissions during gas turbine startups. In addition, after the new gas turbine combustor components are installed, the gas turbine's fuel system must be tuned periodically, including after major overhauls, to maintain compliance with manufacturer's specifications for emissions and combustion dynamics and to perform combustion and hot gas path inspections. Multiple fuel systems supply fuel gas to each gas turbine combustor, and the total gas flow is divided among the fuel systems to minimize NOx and CO production while also minimizing combustor dynamics and ensuring combustor stability. After gas turbine combustor replacement, a combustor must be tuned across its load range to achieve the optimal apportionment of fuel gas at each load point. During these low-load tuning operations, gas turbine CO and NOx emissions are expected to exceed the routine operation hourly and daily limits of conditions 29 and 33, respectively. As part of this modification, NCPA proposes to limit tuning activities to 8 hours per tuning event, not to exceed 40 hours in a calendar year, and to limit tuning emissions to the same levels as startup and shutdown emissions.

### **Hourly, Daily, and Annual CO Limits**

NCPA is requesting an increase in only the hourly CO emission limit during startup and the hourly and daily emission limits applicable to combustor tuning activities, and does not need to change other daily or annual emission limits for the gas turbine. During the original permitting, we estimated that the gas turbine might require up to three hours to achieve compliance with the controlled CO emission limit of 2.0 ppmvd @ 15% O<sub>2</sub> (ppmc). The maximum daily CO emissions level of 5,570.3 pounds per day (Condition 32) was calculated assuming that the turbine could undergo two three-hour startups per day with emissions of up to 900 pounds per hour during those startup hours, for a total of 5,400 pounds of CO emitted during startups. We have found, however, that under most circumstances the gas turbine is able to achieve compliance with the 2 ppmc limit in less than two hours, so we do not expect daily CO emissions during startup to exceed the existing daily limit, even with the higher hourly CO emissions during startup.

Since we anticipate no increase in maximum daily emissions, there will also be no increase in quarterly or annual CO emissions.

### Best Available Control Technology Assessment

Best Available Control Technology (BACT) requirements do not apply to the proposed modification because (1) the modification will not result in any increase in daily emissions (Rule 2201, Section 4.1.2); and (2) the CO emissions from the facility will remain below 200,000 pounds per year (Rule 2201, Section 4.2). Nevertheless, the proposed increase in allowable CO emissions during startup and combustor tuning activities does not affect the District's previous determination that the use of the Siemens "Flex Plant™ 30" fast-startup technology with a limit of three hours for each startup constitutes BACT for startup and shutdown for this project. Under Conditions 18 and 19 of the ATC, NCPA will be required to report to the District on actual startup times and emissions measurements for the first year of operation, and to propose new time limits for startups if justified by the startup data. At that time, NCPA may propose, and the District may agree, to reduce the three-hour startup limit based on the actual turbine operating data.

### Ambient Impact of the Increase in Maximum Hourly CO Emissions

Table 5.1-29R of the Application for Certification evaluated maximum modeled impacts during gas turbine startup based on a maximum 900 lb/hr CO emission rate. These original modeling results predicted a maximum modeled 1-hour CO concentration of  $337 \mu\text{g}/\text{m}^3$  and a maximum 8-hour average concentration of  $110 \mu\text{g}/\text{m}^3$ .<sup>1</sup> These modeling results can be scaled assuming a maximum hourly emission rate of 1,500 lb/hr during both startups. The results shown in Table 1 below indicate that the proposed CO emission rate during startups and combustor tuning activities is not expected to cause a violation of state or federal ambient CO standards.

Table 1  
Revised Modeled Maximum Impacts During Startup/Tuning of the CTG/HRSG

Pollutant	Averaging Time	Maximum Facility Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )	State Standard ( $\mu\text{g}/\text{m}^3$ )	Federal Standard ( $\mu\text{g}/\text{m}^3$ )
CO	1-hour	562	5,500	6,062	23,000	40,000
	8-hour	113	3,361	3,474	10,000	10,000

<sup>1</sup> In the original application, the 8-hour average concentration of  $110 \mu\text{g}/\text{m}^3$  was modeled assuming that the gas turbine is in startup for six hours and at base load under cold temperature conditions for two hours, for a total of 5,408 lb CO over the eight-hour period. For the proposed modification, maximum 8-hour impacts would occur if all daily emissions were emitted during an 8-hour period. Based on the original modeling results, we can use  $\chi/Q$  to evaluate impacts based on the higher emission rate:

$$5,570.3 \text{ lb}/5,408 \text{ lb} * 110 \mu\text{g}/\text{m}^3 = 113 \mu\text{g}/\text{m}^3$$



**Proposed Revised Permit Condition**

We are requesting that Conditions 25, 26, 27, 28, 29, 32 and 33 be revised to read as follows:

25. During start-up, ~~and shutdown and combustor tuning periods~~, the emissions shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) – 160.00 lb/hr; CO – ~~900.00~~ 1500.00 lb/hr; VOC (as methane) – 16.00 lb/hr; PM<sub>10</sub> – 9.00 lb/hr; SO<sub>x</sub> (as SO<sub>2</sub>) – 6.10 lb/hr; or NH<sub>3</sub> – 28.76 lb/hr.
26. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status ending when the fuel supply to the unit is completely turned off.
27. ~~Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status ending when the fuel supply to the unit is completely turned off.~~ Combustor tuning periods are any periods, not to exceed 8 hours in any calendar day or 40 hours in any calendar year, when combustor tuning activities are taking place. Combustor tuning activities are defined as any testing, adjustment, tuning, and calibration activities recommended by the gas turbine manufacturer to insure safe and reliable steady-state operation of the gas turbines following replacement of the combustor components, during seasonal tuning events, or at other times when recommended by the turbine manufacturer or necessary to maintain low emissions performance. This includes, but is not limited to, adjusting the amount of fuel distributed between the combustion turbine's staged fuel systems to simultaneously minimize NO<sub>x</sub> and CO production while minimizing combustor dynamics and ensuring combustor stability.
28. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup, ~~and shutdown and combustor tuning periods.~~
29. Except during startup, ~~and shutdown and combustor tuning periods~~, emissions from the gas turbine system shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 15.54 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>; CO - 9.46 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>; VOC (as methane) 3.79 lb/hr and 1.4 ppmvd @ 15% O<sub>2</sub>; PM<sub>10</sub> - 9.0 lb/hr; or SO<sub>x</sub> (as SO<sub>2</sub>) - 6.10 lb/hr. NO<sub>x</sub> (as NO<sub>2</sub>) emission limits are based on 1-hour rolling average period. All other emission limits are based on 3-hour rolling average period.
32. Emissions from the gas turbine system, on days when ~~a startup, and/or shutdown and/or combustor tuning activities occurs~~, shall not exceed the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 879.7 lb/day; CO - 5,570.3 lb/day; VOC - 164.2 lb/day; PM<sub>10</sub> - 216.0 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) - 146.4 lb/day, or NH<sub>3</sub> - 690.3 lb/day. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight.
33. Emissions from the gas turbine system, on days when ~~a startup, and/or shutdown and/or combustor tuning activities does not occur~~, shall not exceed the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 373.0 lb/day; CO - 227.0 lb/day; VOC - 91.0 lb/day; PM<sub>10</sub> - 216.0

*lb/day; SOx (as SO<sub>2</sub>) - 146.4 lb/day, or NH<sub>3</sub> - 690.3 lb/day. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight.*

No other changes to the permit are being requested.

We appreciate your consideration of this request. The required application forms are attached, along with a check for the Rule 3010 filing fees, as follows:

Authority to Construct fee:	\$71
Part 70 fee:	<u>\$19</u>
Total	\$90

If you have any questions regarding this request, please contact Vinnie Venethongkham of my staff at (209) 210-5009 or Jeff Adkins of Sierra Research at (916) 273-5127.

Sincerely,



Kevin Cunningham  
Combustion Turbine Manager

Attachments



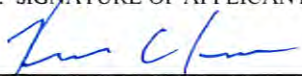
cc: Jeff Adkins, Sierra Research  
Andrea Grenier

# San Joaquin Valley Air Pollution Control District

[www.valleyair.org](http://www.valleyair.org)

## Permit Application For:

- ☐ AUTHORITY TO CONSTRUCT (ATC) - New Emission Unit  
☒ AUTHORITY TO CONSTRUCT (ATC) - Modification Of Emission Unit With Valid PTO/Valid ATC  
☐ AUTHORITY TO CONSTRUCT (ATC) - Renewal of Valid Authority to Construct  
☐ PERMIT TO OPERATE (PTO) - Existing Emission Unit Now Requiring a Permit to Operate

1. PERMIT TO BE ISSUED TO: Northern California Power Agency		
2. MAILING ADDRESS: STREET/P.O. BOX: <u>P. O. Box 1478</u> CITY: <u>Lodi</u> STATE: <u>CA</u> 9-DIGIT ZIP CODE: <u>95241-1478</u>		
3. LOCATION WHERE THE EQUIPMENT WILL BE OPERATED: STREET: <u>12745 North Thornton Road</u> CITY: <u>Lodi</u> <u>SW</u> /4 SECTION <u>24</u> TOWNSHIP <u>T3N</u> RANGE <u>R5E</u>		WITHIN 1,000 FT OF A SCHOOL? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO S.I.C. CODE(S) OF FACILITY (If known): <u>4911</u>
4. GENERAL NATURE OF BUSINESS: Electrical Power Production		INSTALL DATE: Feb 2013
5. TITLE V PERMIT HOLDERS ONLY: Do you request a COC (EPA Review) prior to receiving your ATC (If yes, please complete and attach a Compliance Certification form (TVFORM-009)? <span style="float: right;"><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</span>		
6. DESCRIPTION OF EQUIPMENT OR MODIFICATION FOR WHICH APPLICATION IS MADE (include Permit #'s if known, and use additional sheets if necessary) Amend Conditions #25, 26, 27, 28, 29, 32 and 33 of existing ATC to: (1) Increase hourly CO limit during startup from 900 lb/hr to 1500 lb/hr; and (2) Extend the applicability of the hourly and daily emissions limits for startup and shutdown activities to combustor tuning activities.		
7. PERMIT REVIEW PERIOD: Do you request a three- or ten-day period to review the draft Authority to Construct permit? Please note that checking "YES" will delay issuance of your final permit by a corresponding number of working days. See instructions for more information on this review process. <span style="float: right;"> <input checked="" type="checkbox"/> 3-day review  <input type="checkbox"/> 10-day review  <input type="checkbox"/> No review requested                 </span>		
8. HAVE YOU EVER APPLIED FOR AN ATC OR PTO IN THE PAST? <span style="float: right;"><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</span> If yes, ATC/PTO #: <u>N-2697-5-0</u>	<b>Optional Section</b> 11. DO YOU WANT TO PARTICIPATE IN EITHER OF THE FOLLOWING VOLUNTARY PROGRAMS: "HEALTHY AIR LIVING (HAL)" <span style="float: right;"></span> <input type="checkbox"/> Yes, please send info "INSPECT" <span style="float: right;"></span> <input type="checkbox"/> Yes, please send info	
9. IS THIS APPLICATION FOR THE CONSTRUCTION OF A NEW FACILITY? <span style="float: right;"><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</span> (If "Yes" is checked, please complete the CEQA Information form)		
10. IS THIS APPLICATION SUBMITTED AS THE RESULT OF EITHER A NOTICE OF VIOLATION OR A NOTICE TO COMPLY? <span style="float: right;"><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</span> If yes, NOV/NTC #: _____		
12. TYPE OR PRINT NAME OF APPLICANT: Kevin Cunningham	TITLE OF APPLICANT: General Manager, LEC	
13. SIGNATURE OF APPLICANT: 	DATE: <u>1-24-13</u>	PHONE #: (209) 333-6370 x 100 FAX #: (209) 333-6374 E-MAIL: Kevin.Cunningham@ncpagen.com

FOR APCD USE ONLY:

DATE STAMP:	FILING FEE RECEIVED: \$ _____ CHECK #: _____ DATE PAID: _____ PROJECT #: _____ FACILITY ID: _____
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Northern Regional Office \* 4800 Enterprise Way \* Modesto, California 95356-8718 \* (209) 557-6400 \* FAX (209) 557-6475  
 Central Regional Office \* 1990 East Gettysburg Avenue \* Fresno, California 93726-0244 \* (559) 230-5900 \* FAX (559) 230-6061  
 Southern Regional Office \* 2700 M Street, Suite 275 \* Bakersfield, California 93301-2370 \* (661) 326-6900 \* FAX (661) 326-6985

Rev: June, 2008



# San Joaquin Valley Air Pollution Control District

## Supplemental Application Form

### Gas Turbines

Please complete one form for each gas turbine.

*This form must be accompanied by a completed Application for Authority to Construct and Permit to Operate form*

PERMIT TO BE ISSUED TO: Northern California Power Agency

#### EQUIPMENT DESCRIPTION

<b>Equipment Details</b>	<input checked="" type="checkbox"/> Industrial Frame <input type="checkbox"/> Aero Derivative <input type="checkbox"/> Other: _____				
	Manufacturer: Siemens	Model: Flex-Plant 30	Serial Number: TBD		
	<input type="checkbox"/> Simple Cycle <input checked="" type="checkbox"/> Combined Cycle <input type="checkbox"/> Co-generation <input type="checkbox"/> Other: _____				
	Nominal (ISO) Rating: <u>294</u> MW (at 1 atm, 59F, 60% Relative Humidity)				
	Is the unit equipped with an auxiliary/duct burner? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Note: If yes, please complete a <i>Boiler, Steam Generator, Dryer, and Process Heater Supplemental Application form</i> for the unit.)				
<b>Rule 4703 Type of Use and Emissions Monitoring Provisions</b>	<input type="checkbox"/> Peaking Unit - limited to no more than 877 hrs/yr of operation <input type="checkbox"/> Emergency Standby - limited to less than 200 hrs/yr of operation <input checked="" type="checkbox"/> Full Time - must have either a Continuous Emission Monitoring System (CEMS) or an alternate emissions monitoring plan (must be approved by the APCO) <input checked="" type="checkbox"/> CEMS, please specify all pollutants monitored: <input checked="" type="checkbox"/> NO <sub>x</sub> <input checked="" type="checkbox"/> CO <input checked="" type="checkbox"/> O <sub>2</sub> <input type="checkbox"/> Other: _____ <input type="checkbox"/> Alternate Emissions Monitoring Plan (please provide details in additional documentation)				
	<b>Fuel Use Meter</b> <input checked="" type="checkbox"/> Gaseous Fuel Meter <input type="checkbox"/> Liquid Fuel Meter <input type="checkbox"/> None				
	<b>Process Data</b> Will this unit be used in an electric utility rate reduction program? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
	<b>Combustor(s)</b>				
Manufacturer: Siemens				Model: Dry Low-NO <sub>x</sub>	Number of Combustors:
Maximum Heat Input Rating (for all combustors @ ISO standard conditions): <u>2142.1</u> MMBtu/hr					
Water Injection: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Dry Low NO <sub>x</sub> Technology: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Steam Injection: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Other NO <sub>x</sub> Control Technology: <u>SCR</u>		

#### EMISSIONS DATA

Note: See District BACT and District Rule 4703 requirements for applicability to proposed unit at <http://www.valleyair.org/busind/pto/bact/chapter3.pdf> and <http://www.valleyair.org/rules/curnrules/r4703.pdf>

<b>Primary Fuel</b>	Fuel Type: <input checked="" type="checkbox"/> Natural Gas <input type="checkbox"/> LPG/Propane <input type="checkbox"/> Diesel <input type="checkbox"/> Other: _____						
	Higher Heating Value: _____ Btu/gal or <u>1004.39</u> Btu/scf			Sulfur Content: _____ % by weight or <u>0.01</u> gr/scf			
	Maximum Fuel Use @ HHV: <u>1877040</u> scf/hr or _____ gal/hr			Rated Efficiency (EFF <sub>Mfg</sub> ): _____ %			
<b>Primary Fuel Emissions Data</b>	Operational Mode	Steady State		Start-up		Shutdown	
		(ppmv)	(lb/MMBtu)	(ppmv)	(lb/hr)	(ppmv)	(lb/hr)
	Nitrogen Oxides	2.0	0.0073		160.0		160.0
	Carbon Monoxide	2.0	0.0044		1500.0		1500.0
	Volatile Organic Compounds	1.4	0.0018		16.0		16.0
	Duration			<u>6</u> hr/day	<u>468</u> hr/yr	<u>Included in</u> Startup hr/day	<u>Included in</u> Startup hr/yr
% O <sub>2</sub> , dry basis, if corrected to other than 15%: <u>15</u> %							

### EMISSIONS DATA (continued)

<b>Secondary Fuel</b>	When will the secondary fuel be used? <input type="checkbox"/> Primary fuel curtailment <input type="checkbox"/> Simultaneously with primary fuel <input type="checkbox"/> Other: _____						
	Fuel Type: <input type="checkbox"/> Natural Gas <input type="checkbox"/> LPG/Propane <input type="checkbox"/> Diesel <input type="checkbox"/> Other: _____						
	Higher Heating Value: _____ Btu/gal or _____ Btu/scf			Sulfur Content: _____ % by weight or _____ gr/scf			
	Maximum Fuel Use @ HHV: _____ scf/hr or _____ gal/hr			Rated Efficiency (EFF <sub>Mfg</sub> ): _____ %			
<b>Secondary Fuel Emissions Data</b>	Operational Mode	Steady State (ppmv)      (lb/MMBtu)		Start-up (ppmv)      (lb/hr)		Shutdown (ppmv)      (lb/hr)	
	Nitrogen Oxides						
	Carbon Monoxide						
	Volatile Organic Compounds						
	Duration (please provide justification)			_____ hr/day	_____ hr/yr	_____ hr/day	_____ hr/yr
	% O <sub>2</sub> , dry basis, if corrected to other than 15%: _____ %						
<b>Source of Data</b>	<input checked="" type="checkbox"/> Manufacturer's Specifications <input type="checkbox"/> Emission Source Test <input type="checkbox"/> Other _____ (please provide copies)						

### EMISSIONS CONTROL

<b>Emissions Control Equipment</b> (Check all that apply)	<input checked="" type="checkbox"/> Inlet Air Filter/Cooler		<input checked="" type="checkbox"/> Lube Oil Vent Coalescer	
	<input checked="" type="checkbox"/> Selective Catalytic Reduction - Manufacturer: _____ TBD _____ Model: _____ TBD _____ <input checked="" type="checkbox"/> Ammonia (NH <sub>3</sub> ) <input type="checkbox"/> Urea <input type="checkbox"/> Other: _____			
	<input checked="" type="checkbox"/> Oxidation Catalyst - Manufacturer: _____ TBD _____ Model: _____ TBD _____			
	Control Efficiencies: NO <sub>x</sub> <u>72</u> %, SO <sub>x</sub> _____ %, PM <sub>10</sub> _____ %, CO _____ %, VOC _____ %			
	<input type="checkbox"/> Other (please specify): _____			
	For units equipped with exhaust gas NO <sub>x</sub> control equipment and rated < 10 MW, or rated ≥ 10 MW but operated < 4,000 hr/yr, one may choose at least one of the following alternate emission monitoring schemes in lieu of a CEMS (each option below must be approved by APCO on a case-by-case basis. Please include a detailed proposal for each option chosen): <input type="checkbox"/> Periodic NO <sub>x</sub> emission concentration <input type="checkbox"/> Turbine exhaust O <sub>2</sub> concentration <input type="checkbox"/> Air-to-Fuel ratio <input type="checkbox"/> Flow rate of reducing agents added to turbine exhaust <input type="checkbox"/> Catalyst inlet and outlet temperature <input type="checkbox"/> Catalyst inlet and exhaust O <sub>2</sub> conc. <input type="checkbox"/> Other operational characteristics as approved by the APCO (specify on attached sheet)			

### HEALTH RISK ASSESSMENT DATA

<b>Operating Hours</b>	Maximum Operating Schedule: <u>24</u> hours per day, and <u>8760</u> hours per year		
<b>Receptor Data</b>	Distance to nearest Residence	<u>2323.2</u> feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest apartment, house, dormitory, etc.
	Direction to nearest Residence	<u>North</u>	Direction from the stack to the receptor, i.e. Northeast or South.
	Distance to nearest Business	<u>101.53</u> feet	Distance is measured from the proposed stack location to the nearest boundary of the nearest office building, factory, store, etc.
	Direction to nearest Business	<u>Northeast</u>	Direction from the stack to the receptor, i.e. North or Southwest.
<b>Stack Parameters</b>	Release Height	<u>150</u> feet above grade	
	Stack Diameter	<u>264</u> inches at point of release	
	Rain Cap	<input type="checkbox"/> Flapper-type <input type="checkbox"/> Fixed-type <input checked="" type="checkbox"/> None <input type="checkbox"/> Other: _____	
	Direction of Flow	<input checked="" type="checkbox"/> Vertically Upward <input type="checkbox"/> Horizontal <input type="checkbox"/> Other: _____ ° from vert. or _____ ° from horiz.	
<b>Exhaust Data</b>	Flowrate: <u>1185012</u> acfm	Temperature: <u>186</u> °F	
<b>Facility Location</b>	<input type="checkbox"/> Urban (area of dense population) <input checked="" type="checkbox"/> Rural (area of sparse population)		

### FOR DISTRICT USE ONLY

Date:	FID:	Project:	Public Notice: [ ] Yes [ ] No
Comments:			

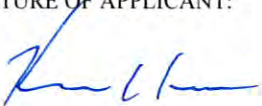


# San Joaquin Valley Air Pollution Control District

[www.valleyair.org](http://www.valleyair.org)

## Permit Application For:

[ ] ADMINISTRATIVE AMENDMENT [ ] MINOR MODIFICATION [✓] SIGNIFICANT MODIFICATION

1. PERMIT TO BE ISSUED TO: <b>Northern California Power Agency</b>	
2. MAILING ADDRESS:  STREET/P.O. BOX: <b>P. O. Box 1478</b>  CITY: <b>Lodi</b> STATE: <b>CA</b> 9-DIGIT ZIP CODE: <b>95241-1478</b>	
3. LOCATION WHERE THE EQUIPMENT WILL BE OPERATED:  STREET: <b>12745 North Thornton Road</b> CITY: <b>Lodi</b>  <b>SW</b> ¼ SECTION <b>24</b> TOWNSHIP <b>T3N</b> RANGE <b>R5E</b>	INSTALLATION DATE: <b>February 2013</b>
4. GENERAL NATURE OF BUSINESS: <b>Electrical Power Production</b>	
5. DESCRIPTION OF EQUIPMENT OR MODIFICATION FOR WHICH APPLICATION IS MADE (include Permit #'s if known, and use additional sheets if necessary)  <b>Amend Conditions #25, 26, 27, 28, 29, 32 and 33 of existing ATC to:</b> (1) Increase hourly CO limit during startup from 900 lb/hr to 1500 lb/hr; and (2) Extend the applicability of the hourly and daily emissions limits for startup and shutdown activities to combustor tuning activities.	
6. TYPE OR PRINT NAME OF APPLICANT:  <b>Kevin Cunningham</b>	TITLE OF APPLICANT:  <b>General Manager, LEC</b>
7. SIGNATURE OF APPLICANT:  	DATE: <b>1-24-13</b>  PHONE: (209) 333-6370 x 100 FAX: (209) 333-6374 EMAIL: Kevin.Cunningham@ncpagen.com

### For APCD Use Only:

DATE STAMP	FILING FEE RECEIVED: \$ _____	CHECK#: _____
	DATE PAID: _____	
	PROJECT NO: _____ FACILITY ID: _____	

**San Joaquin Valley  
Unified Air Pollution Control District**

**TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM**

**I. TYPE OF PERMIT ACTION** (Check appropriate box)

- ☒ SIGNIFICANT PERMIT MODIFICATION                      ☐ ADMINISTRATIVE  
☐ MINOR PERMIT MODIFICATION                                      AMENDMENT

COMPANY NAME: <b>Northern California Power Agency</b>	FACILITY ID: <b>- 2697</b>
1. Type of Organization: <input type="checkbox"/> Corporation <input type="checkbox"/> Sole Ownership <input type="checkbox"/> Government <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Utility	
2. Owner's Name: <b>Northern California Power Agency</b>	
3. Agent to the Owner: <b>Kevin Cunningham</b>	

**II. COMPLIANCE CERTIFICATION** (Read each statement carefully and initial **all** circles for confirmation):

- ☒ Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).
- ☒ Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.
- ☒ Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.
- ☒ Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

  
\_\_\_\_\_

Signature of Responsible Official

1-24-13  
\_\_\_\_\_

Date

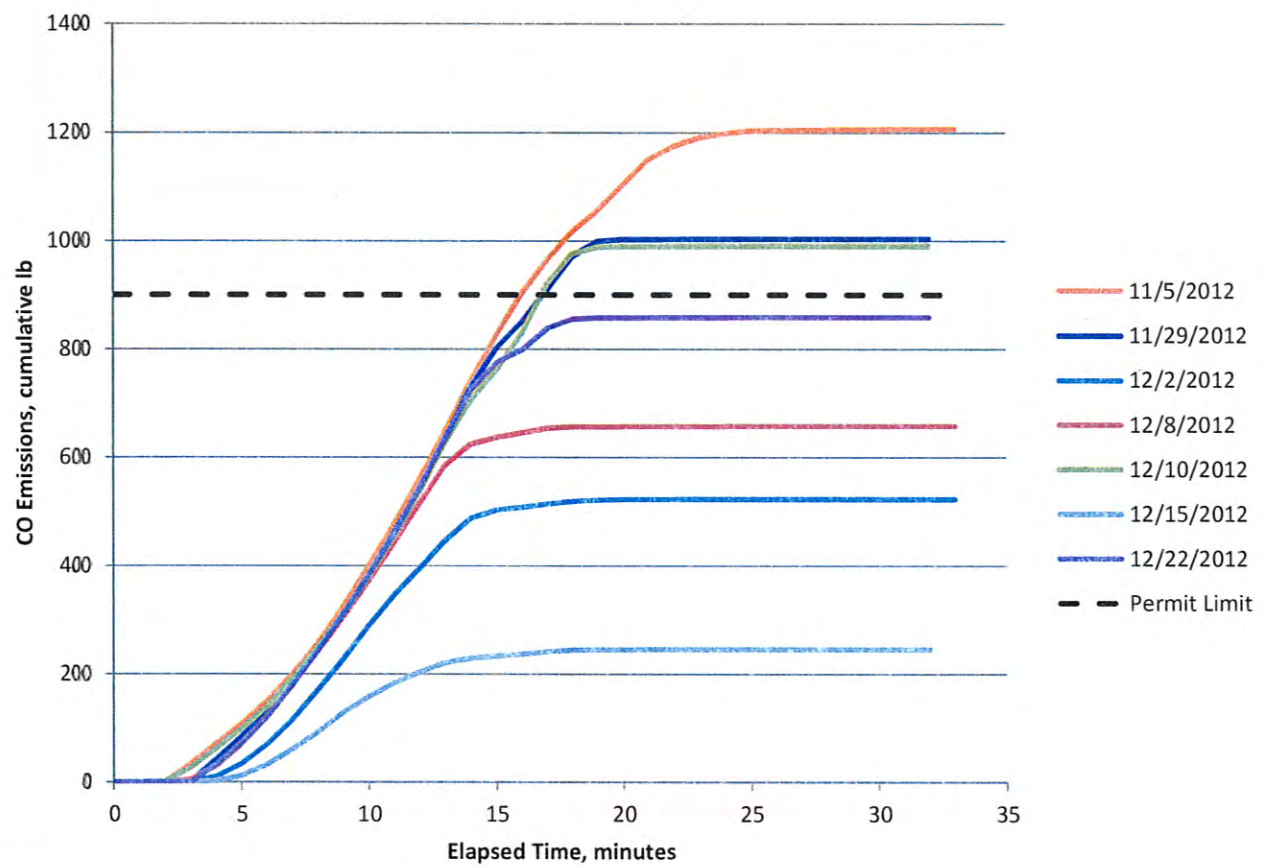
**Kevin Cunningham**  
\_\_\_\_\_

Name of Responsible Official (please print)

**General Manager, Lodi Energy Center**  
\_\_\_\_\_

Title of Responsible Official (please print)

## CO Emissions During Gas Turbine Startups NCPA Lodi Energy Center





179812



**usbank.** All of **us** serving you®

90-2267-1211

DATE  
1/29/2013  
AMOUNT  
\$90.00

Ninety Dollars and 00 Cents

PAY  
TO THE  
ORDER  
OF

SJVAPCD  
4800 Enterprise Way  
Modesto CA 95356-8718



*Tr. Lutter*  
AUTHORIZED SIGNATURE

Security features. Details on back.

⑈ 1 7 9 8 1 2 ⑈ ⑈ 1 2 1 1 2 2 6 7 6 ⑈ ⑈ 1 5 3 4 0 2 1 6 2 7 4 ⑈ ⑈

NORTHERN CALIFORNIA POWER AGENCY

179812

Vendor ID	Name	Voucher Number	Check Date	Document Number	
021963	SJVAPCD	0183483	1/29/2013	179812	
Invoice Number	Date	Amount	Amount Paid	Discount	Net Amount Paid
12213	1/22/2013	\$90.00	\$90.00	\$0.00	\$90.00

\$90.00      \$90.00      \$0.00      \$90.00

## Appendix B

Property Owners Within 1,000 Feet of LEC Property Boundary

	PARCEL	OWNERFIRST	OWNERLAST	MAILNUMBER	MAILSTREET	MAILCITY	MAILSTATE	MAILZIP
1	055 130 16	City of Lodi		221	W Pine St	Lodi	CA	95240
2	055 120 03	Van Ruiten Ranch Ltd		12001	N Thornton Rd	Lodi	CA	95242
3	055 120 08	Van Ruiten Ranch Ltd		11889	N Thornton Rd	Lodi	CA	95242
4	055 120 11	City of Lodi		221	W Pine St	Lodi	CA	95240
5	055 130 04	City of Lodi		221	W Pine St	Lodi	CA	95240
6	055 130 07	Hamm Family Trust		13438	N Thornton Rd	Lodi	CA	95242
7	055 130 13	City of Lodi		221	W Pine St	Lodi	CA	95240
8	055 150 09	California State Of		12045	N Thornton Rd	Lodi	CA	95242
9	055 150 14	City of Lodi		221	W Pine St	Lodi	CA	95240
10	055 150 15	City of Lodi		221	W Pine St	Lodi	CA	95240
11	055 150 17	City of Lodi		221	W Pine St	Lodi	CA	95240
12	055 150 29	City of Lodi		221	W Pine St	Lodi	CA	95240



314.14 AQS

13 ROAD  
24

T.3N.R.5E.

14

1 900

THIS MAP IS FOR  
ASSESSMENT USE ONLY 2

CITY OF LOBI  
 Δ (3)  
 158.57 AC.